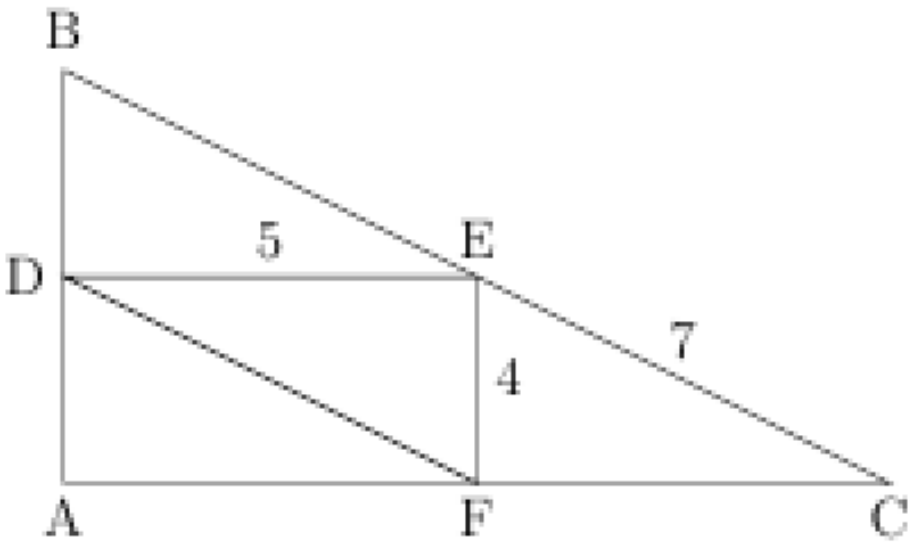
Topic: Midsegments of triangles

Question: Find the length of the perimeter.

In ΔABC, D, E, and F are midpoints. What is the perimeter of ΔABC?



Answer choices:

A 16

B 21

C 24

D 32

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Solution: D

Because D, E, and F are midpoints, we can say

If $EC = 7$, then $BC = 14$

If $DE = 5$, then $AC = 10$

If $EF = 4$, then $AB = 8$

Then we can add the three sides together to say that the perimeter is

$$14 + 10 + 8 = 32$$

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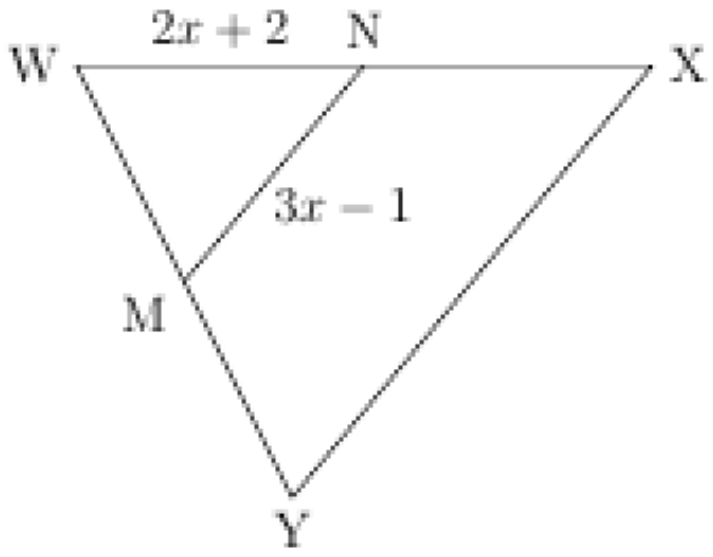
Topic: Midsegments of triangles

Question: Find the length of the line segment.

In ΔWXY, M and N are midpoints and $WX = 24$. Calculate XY.



Answer choices:

A 18

B 22

C 24

D 28

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Solution: D

Because $WX = 24$ and N is a midpoint, we can say

$$2x + 2 + 2x + 2 = 24$$

$$x = 5$$

Because M and N are midpoints, we get

$$MN = \frac{1}{2}XY$$

$$3x - 1 = \frac{1}{2}XY$$

Substitute 5 for x.

$$14 = \frac{1}{2}XY$$

$$28 = XY$$

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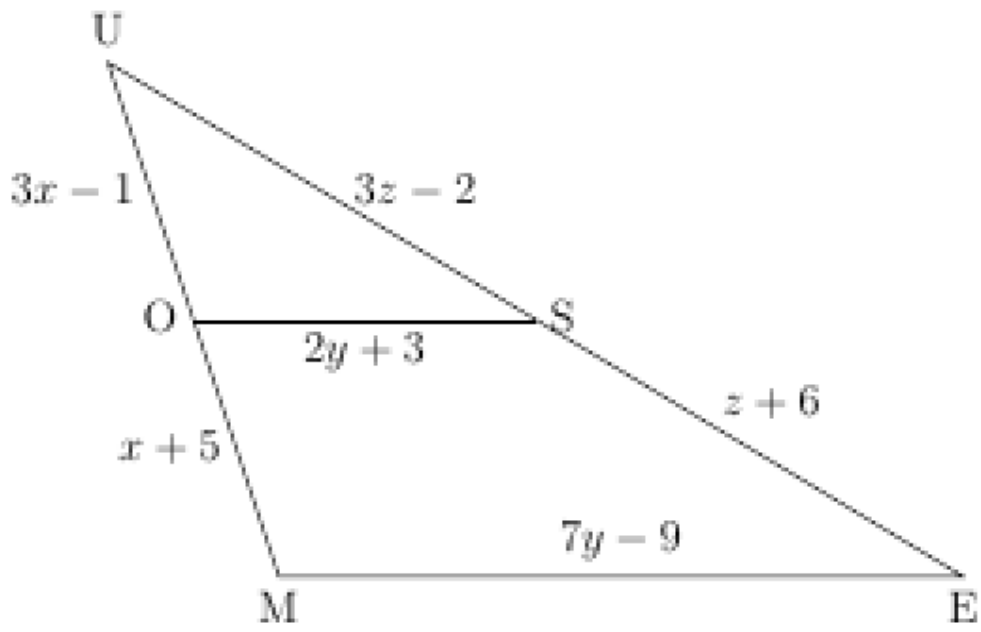
Topic: Midsegments of triangles

Question: Find the indicated value.

In ΔMUE, O and S are midpoints. Calculate $x + y + z$.



Answer choices:

A 12

B 15

C 24

D 25

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Solution: A

Because O is a midpoint,

$$3x - 1 = x + 5$$

$$x = 3$$

Because O and S are midpoints,

$$OS = \frac{1}{2}ME$$

$$2y + 3 = \frac{1}{2}(7y - 9)$$

$$y = 5$$

Because S is a midpoint,

$$3z - 2 = z + 6$$

$$z = 4$$

Therefore,

$$x + y + z$$

$$3 + 5 + 4$$

$$12$$

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